WHAT IS CLAIMED IS:

1. A transmitted magnetic field signal, comprising:

a carrier component useable for locating an underground object, the carrier component having a carrier component frequency substantially equal to an integer multiple of 300 Hz.

2. The transmitted signal of claim 1, further comprising:

an information sideband including sideband energy, a substantial portion of the sideband energy being contained between the carrier component frequency and a frequency spaced 50 Hz from the carrier component frequency.

3. The transmitted signal of claim 2, wherein the substantial portion includes at least 50% of the sideband energy.

4. The transmitted signal of claim 2, wherein the information sideband has a frequency bandwidth defined between a first sideband frequency and a second sideband frequency, the first sideband frequency being frequency offset from the carrier signal frequency and the second sideband frequency being farther away from the carrier signal frequency than the first sideband frequency and less than 50 Hz from the carrier signal frequency.

5. The transmitted signal of claim 1, further comprising:

a lower information sideband including lower sideband energy, a substantial portion of the lower sideband energy being contained between the carrier component frequency and a frequency spaced 50 Hz below the carrier component frequency; and

an upper information sideband including upper sideband energy, a substantial portion of the upper sideband energy being contained between the

carrier component frequency and a frequency spaced 50 Hz above the carrier component frequency.

6. The transmitted signal of claim 5, wherein:

the substantial portion of the lower sideband energy includes at least 50% of the lower sideband energy; and

the substantial portion of the upper sideband energy includes at least 50% of the upper sideband energy.

7. The transmitted signal of claim 5, wherein:

the lower information sideband has a frequency bandwidth defined between a first lower sideband frequency and a second lower sideband frequency each less than the carrier component frequency, the first lower sideband frequency being frequency offset from the carrier signal frequency and the second lower sideband frequency being farther away from the carrier signal frequency than the first lower sideband frequency and less than 50 Hz below the carrier signal frequency; and

the upper information sideband has a frequency bandwidth defined between a first upper sideband frequency and a second upper sideband frequency each greater than the carrier component frequency, the first upper sideband frequency being frequency offset from the carrier signal frequency and the second upper sideband frequency being farther away from the carrier signal frequency than the first upper sideband frequency and less than 50 Hz above the carrier signal frequency.

8. The transmitted signal of claim 5, wherein the lower and upper information sidebands are amplitude modulation sidebands.

9. The transmitted signal of claim 8, wherein the lower and upper information sidebands are symmetric about the carrier component.

10. The transmitted signal of claim 5, wherein the lower and upper information sidebands convey information.

11. The transmitted signal of claim 10, wherein the lower and upper information sidebands convey between 50 and 80 bits per second of information.

12. The transmitted signal of claim 10, wherein the lower and upper information sidebands convey 75 bits pers second of information.

13. A magnetic field signal usable for conveying information from an underground transmit device to an above ground receive device in an environment that includes interference signals at regular harmonic intervals that are spaced approximately 50 Hz or 60 Hz apart from one another, the magnetic field signal comprising:

a carrier component useable for locating the underground transmit device, the carrier component having a carrier component frequency substantially equal to an integer multiple of both 50 Hz and 60 Hz; and

at least one information sideband including sideband energy, a substantial portion of the sideband energy being contained between the carrier component frequency and a frequency spaced 50 Hz from the carrier component frequency.

14. The magnetic field signal of claim 13, wherein the substantial portion includes at least 50% of the sideband energy.

15. The magnetic field signal of claim 14, wherein the information sideband has a frequency bandwidth defined between a first sideband frequency and a second sideband frequency, the first sideband frequency being frequency offset from the carrier signal frequency and the second sideband frequency being farther away from the carrier signal frequency than the first sideband frequency and less than 50 Hz from the carrier signal frequency.

16. The magnetic field signal of claim 13, wherein the at least one information sideband comprises:

a lower information sideband including lower sideband energy, a substantial portion of the lower sideband energy being contained between the carrier component frequency and a frequency spaced 50 Hz above the carrier component frequency; and

an upper information sideband including upper sideband energy, a substantial portion of the upper sideband energy being contained between the carrier component frequency and a frequency spaced 50 Hz below the carrier component frequency.

17. The magnetic field signal of claim 16, wherein the lower and upper information sidebands are amplitude modulation sidebands.

18. The magnetic field signal of claim 16, wherein the lower and upper information sidebands are symmetric about the carrier component.

19. The magnetic field signal of claim 16, wherein the lower and upper information sidebands convey information.

20. The magnetic field signal of claim 19, wherein the lower and upper information sidebands convey between 50 and 80 bits per second of information.

21. The magnetic field signal of claim 19, wherein the lower and upper information sidebands convey 75 bits pers second of information.

22. A method for generating a magnetic field signal usable for locating an underground object, comprising:

(a) producing a drive signal including a carrier component having a carrier component frequency substantially equal to an integer multiple of 300 Hz; and

(b) driving a transponder with the drive signal to generate the magnetic field signal, the magnetic field signal having a magnetic field carrier component equal to the carrier component frequency.

23. The method of claim 22, wherein step (a) comprises:

(a.1) generating a reference signal having a reference signal frequency substantially equal to the integer multiple of 300 Hz;

(a.2) receiving an information signal;

(a.3) encoding the information signal to produce an encoded information signal; and

(a.4) modulating the reference signal with the encoded information signal at a predetermined bit rate to produce the drive signal, the drive signal including the carrier component and at least one information sideband including sideband energy, the encoding and bit rate causing a substantial portion of the sideband energy to be contained between the carrier component frequency and a frequency spaced 50 Hz from the carrier component frequency.

24. The method of claim 23, wherein step (b) comprises driving the transponder with the drive signal to generate the magnetic field signal, the magnetic field signal having a magnetic field signal carrier component equal to the carrier component frequency and at least one magnetic field signal information sideband including magnetic field signal sideband energy, a substantial portion of the magnetic field signal sideband energy contained between the carrier component frequency and the frequency spaced 50 Hz from the carrier component frequency.

25. The method of claim 24, wherein step (a.4) comprises amplitude modulating the reference signal with the encoded information signal at a bit rate between 80 bits per second (pbs) and 50 bps to produce the drive signal.

26. The method of claim 25, wherein step (a.4) comprises amplitude modulating the reference signal with the encoded information signal at a bit rate of 75 bits per second to produce the drive signal.

27. The method of claim22, wherein step (a) comprises:

(a.1) generating a reference signal having a reference signal frequency substantially equal to the integer multiple of 300 Hz;

(a.2) receiving an information signal;

(a.3) encoding the information signal to produce an encoded information signal;

(a.4) modulating the reference signal with the encoded information signal at a predetermined bit rate to produce the drive signal, the drive signal including the carrier component and a lower information sideband and an upper information sideband, each of the lower and upper information sideband including respective sideband energy, the encoding and bit rate causing

(i.) a substantial portion of the lower sideband energy to be contained between the carrier component frequency and a frequency spaced 50 Hz below the carrier component frequency, and

(ii.) a substantial portion of the upper sideband energy to be contained between the carrier component frequency and a frequency spaced 50 Hz above the carrier component frequency.

28. The method of claim 27, wherein step (b) comprises driving the transponder with the drive signal to generate the magnetic field signal, the magnetic field signal having

a magnetic field signal carrier component equal to the carrier component frequency,

a lower magnetic field signal information sideband, and

an upper magnetic field signal information sideband,

wherein the lower magnetic field signal information sideband includes magnetic field signal lower sideband energy, a substantial portion of the magnetic field signal lower sideband energy contained between the carrier component frequency and the frequency spaced 50 Hz below the carrier component frequency, and

wherein the upper magnetic field signal information sideband includes magnetic field signal upper sideband energy, a substantial portion of the magnetic field signal upper sideband energy contained between the carrier component frequency and the frequency spaced 50 Hz above the carrier component frequency.

29. The method of claim 28, wherein step (a.4) comprises amplitude modulating the reference signal with the encoded information signal at a bit rate between 80 bits per second (pbs) and 50 bps to produce the drive signal.

30. The method of claim 29, wherein step (a.4) comprises amplitude modulating the reference signal with the encoded information signal at a bit rate of 75 bits per second to produce the drive signal.

31. A system for generating a magnetic field signal usable for locating an underground object, comprising:

a subsystem to produce a drive signal including a carrier component having a carrier component frequency substantially equal to an integer multiple of 300 Hz; and

a transponder to generate the magnetic field signal when driven by the drive signal, the magnetic field signal having a magnetic field carrier component equal to the carrier component frequency.

32. The system of claim 31, wherein the subsystem comprises:

a reference signal generator to produce a reference signal having a reference signal frequency substantially equal to the integer multiple of 300 Hz;

at least one sensor to produce an information signal;

an encoder to encode the information signal to produce an encoded information signal;

a modulator to modulate the reference signal with the encoded information signal at a predetermined bit rate to produce the drive signal, the drive signal including the carrier component and at least one information sideband including sideband energy, the encoder and bit rate causing a substantial portion of the sideband energy to be contained between the carrier component frequency and a frequency spaced 50 Hz from the carrier component frequency.

33. The system of claim 32, wherein the magnetic field signal also has at least one magnetic field signal information sideband including magnetic field signal sideband energy, a substantial portion of the magnetic field signal sideband energy contained between the carrier component frequency and the frequency spaced 50 Hz from the carrier component frequency.

34. The system of claim 33, wherein the modulator amplitude modulates the reference signal with the encoded information signal at a bit rate between 80 bits per second (pbs) and 50 bps to produce the drive signal.

35. The system of claim 33, wherein the modulator amplitude modulates the reference signal with the encoded information signal at a bit rate of 75 bits per second to produce the drive signal.

36. The system of claim 32, wherein the at least one information sideband produced by the modulator comprises a lower information sideband and an upper information sideband, each of the lower and upper information sideband including respective sideband energy, the encoder and bit rate causing

(i.) a substantial portion of the lower sideband energy to be contained between the carrier component frequency and a frequency spaced 50 Hz below the carrier component frequency, and

(ii.) a substantial portion of the upper sideband energy to be contained between the carrier component frequency and a frequency spaced 50 Hz above the carrier component frequency.

37. The system of claim 36, wherein the magnetic field signal generated by the transponder, when driven by the drive signal, includes

a magnetic field signal carrier component equal to the carrier component frequency,

a lower magnetic field signal information sideband, and

an upper magnetic field signal information sideband,

the lower magnetic field signal information sideband including magnetic field signal lower sideband energy, a substantial portion of the magnetic field signal lower sideband energy contained between the carrier component frequency and the frequency spaced 50 Hz below the carrier component frequency, and

the upper magnetic field signal information sideband including magnetic field signal upper sideband energy, a substantial portion of the magnetic field signal upper sideband energy contained between the carrier component frequency and the frequency spaced 50 Hz above the carrier component frequency.

38. The system of claim 36, wherein the modulator amplitude modulates the reference signal with the encoded information signal at a bit rate between 80 bits per second (pbs) and 50 bps to produce the drive signal.

39. The system of claim 36, wherein the modulator amplitude modulates the reference signal with the encoded information signal at a bit rate of 75 bits per second to produce the drive signal.